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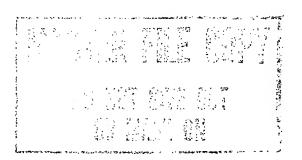
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Thailand's Diminished Energy Prospects: Impact on Development

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An Intelligence Assessment



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EA 83-10230 November 1983

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An Intelligence Assessment

This paper was prepared by
Office of East Asian Analysis. Comments and queries are welcome and may be directed to the Chief,
Southeast Asia Division, OEA

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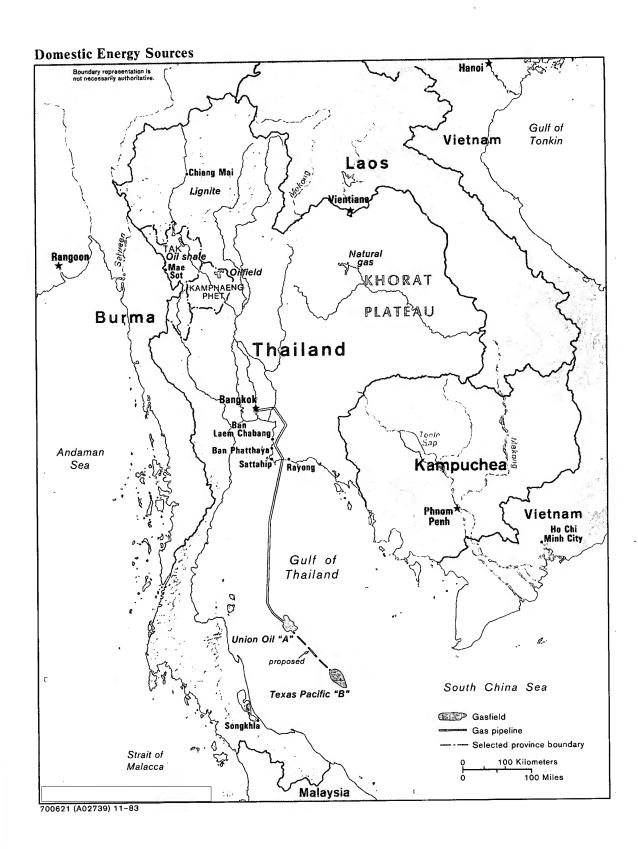
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Secret EA 83-10230 November 1983 Sanitized Copy Approved for Release 2010/12/15: CIA-RDP84S00928R000100170004-1 25X1 Thailand's Diminished **Energy Prospects:** Impact on Development 25X **Key Judgments** A downgrading of natural gas reserves and delay in developing additional Information available gasfields are forcing Bangkok to scale back its ambitious plans for a gasas of 15 October 1983 based heavy industry complex and a liquefied natural gas project intended was used in this report. to boost export earnings. 25X1 Over the next two years the impact of lower-than-expected gas production will most affect the balance of payments and the domestic budget deficit. Bangkok's anticipated \$1 billion savings on oil imports by 1985 will be cut in half and such energy-dependent public utilities as the bus and train

system will continue to post losses, requiring large government subsidies. Attempts to raise prices to cover costs, however, will probably be attacked by the large opposition party as part of its efforts to destabilize Prime Minister Prem's coalition.

In our view, Thai technocrats will use the downgrading of reserves to argue for accelerating the implementation of politically painful economic reforms. Measures to improve agricultural productivity, stimulate foreign investment in labor-intensive manufacturing, and improve the international competitiveness of domestic industry had been delayed in anticipation of a natural gas bonanza. We are somewhat optimistic that Bangkok will implement these reforms in time to prevent the development of increasingly serious economic strains. If it does not, however, Thailand may face sharply reduced growth and potentially serious balance-of-payments and unemployment problems by the end of the decade.

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Energy	Prospects:	
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Great Expectations

Bangkok predicated its economic growth strategy for the 1980s on the use of offshore natural gas reserves to reduce the country's heavy dependence on imported petroleum, stimulate the creation of a capital-intensive manufacturing sector, and finance agricultural development projects. Until last year this optimism appeared to be solidly based. In the mid-1970s two US companies—Union Oil and Texas Pacific 1—discovered substantial quantities of natural gas in the Gulf of Thailand. By early 1982 independent consultants placed proved and probable reserves in Union Oil's "A" structure and Texas Pacific's "B" structure at 450 billion cubic meters (bcm), enough to make a substantial dent in Thailand's high energy-import bill.

Bangkok's development plans relied on natural gas to:

- Cut the import bill by substituting domestic gas for imported fuel oil in electricity generation and other industrial processes.
- Supply feedstocks for a natural gas-based heavy industrial complex (the Eastern Seaboard Development Program) that would include petrochemicals, fertilizer plants, iron and steel plants, as well as nonenergy-related manufacturing.
- Allow the export of liquefied natural gas (LNG).

According to the US Embassy, gas-based development was also expected to attract additional foreign investment, employ a portion of the rapidly growing labor force, and give Thailand a much-needed buffer against future increases in international oil prices.

The construction of a \$500 million gas pipeline, funded by World Bank loans, proceeded smoothly, and gas production began ahead of schedule in September 1981. Prime Minister Prem declared at the

¹ A subsidiary of Canada's Seagram's conglomerate, Texas Pacific is incorporated in the United States.

opening of the pipeline that domestic gas reserves gave rise to a "new era of hope and glory" for Thailand, and he amended a traditional Thai prayer giving thanks for "fish in the seas and rice in the fields" to include "gas in the gulf."

The Dream Dims

The "glorious boom" Bangkok predicted never materialized. Problems arose with Erawan, the only producing gasfield, almost from the start. Industry journals report that unexpectedly high gas temperatures destroyed some equipment in the production wells and required costly equipment modification. More importantly, gas production has fallen far short of projections. In its first gas supply contract, Union Oil agreed to sell 7 million cubic meters per day (mcmd) to the Petroleum Authority of Thailand (PTT) by 1983. Despite measures taken by the company to enhance production, including drilling additional wells, however, production had risen to only 4 mcmd by late September—not even enough to supply the newly converted Bangkok power plants, much less a private cement plant which had built its own trunk pipeline.

The controversy over the production shortfall lasted nearly a year. Union maintained that Erawan's reserves were substantially lower than the estimated 45 bcm. According to the financial press, Thai officials believed Union might be downgrading the reserves in order to charge a higher price for its gas, and Bangkok hired an independent consultant to reevaluate the field.

The reevaluation, completed in July, dashed Bangkok's hopes that Erawan's production would eventually increase to the contracted rate. The report downgraded proved reserves to about 40 percent of the original estimate and supported Union's other claim that the gas reservoir is fragmented into many

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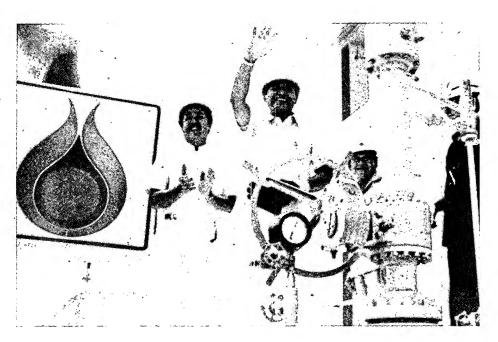
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Prime Minister Prem Opens the Natural Gas Pipeline, September 1981

The gas flows through a 425-kilometer underwater pipeline to a terminal between Sattahip and Rayong and then through a 160-kilometer onshore pipeline to two power plants in the Bangkok area. The World Bank funded most of the \$500 million cost of the pipeline delivery system.



small pockets, necessitating the costly drilling of additional wells. The consultant also noted that the other undeveloped fields in Union's concession are probably fragmented, too, and that proved offshore reserves may be far less than the 450 bcm on which Bangkok's development plans are based

Bangkok's hardline negotiating is also delaying production of gas from Texas Pacific's "B" structure, which the company estimates contains about 198 bcm of natural gas. Bangkok and Texas Pacific have been deadlocked over the price of gas for domestic use since 1977. Texas Pacific claims it needs a higher wellhead price than Union Oil because of low gas pressure, lower condensate levels, and deeper water.

Accord-

ing to the financial press, the company has now put its concession rights up for sale in an attempt to force PTT to increase its offered price.

The Near-Term Impact

Over the next two years the impact of lower-thanexpected gas production will be felt most strongly in the balance of payments and the domestic budget deficit. Thailand—the fifth-largest oil importer among the less developed countries—remains heavily dependent on imported petroleum, which absorbs about 35 percent of export earnings and provides roughly two-thirds of domestic energy needs. Last year almost one-third of the \$7.7 billion import bill was spent on oil.

The Bank of Thailand had estimated that gas substitution would save \$200 million in oil imports this year and that savings would have reached \$500 million a year by 1985. The downgrading of gas reserves and the delays in the development of additional fields, however, will cut these savings in half. In addition, energy demand in Thailand has increased sharply in the last six months, growing at a 10-percent annual rate as the economy recovers from recession. Most of this increased demand will have to be met by imported oil.

Thai officials also had been counting on the substitution of domestic gas for imported oil to reduce the need for subsidies to energy-dependent, but politically sensitive, state enterprises such as the bus and rail systems and the provincial electric authority. In response to conditions imposed by the International 25X1

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Reserves and Production Potential

Current industry estimates place Thailand's offshore natural gas reserves at 310-340 bcm. Even though Erawan's reserves have been downgraded, Erawan is only one of six fields in the "A" structure. Union is accelerating the development of the Baanpot field near Erawan, with an additional 3 mcmd expected by January. The company also expects to produce an additional 3 mcmd from other fields in the "A" structure by 1987. even if these fields are also fragmented, production would still be economical at current world prices.

The development of Texas Pacific's "B" structure for domestic use awaits the signing of a pricing agreement and the construction of a \$500 million, 170-kilometer underwater pipeline connecting the "B" structure to the main pipeline. Pipeline construction would take two to three years, and by 1988 Bangkok could be getting an additional 4-6 mcmd from a small part of the "B," bringing total gas production up to about 14-17 mcmd:

	1983	1986	1988	1990
Total	4	9	15	19
Union Oil		-11.		
Erawan	4	5	5	5
Other "A" fields	0	4	6	6
"B" structure	0	0	4	8

Monetary Fund and World Bank in return for balance-of-payments loans, Bangkok slashed subsidies to state enterprises by about 75 percent in its budget for the fiscal year that began 1 October. If the shortfall in gas production forces the state enterprises to raise prices to cover the cost of imported oil, the Prem government will find it difficult to maintain the subsidy cuts. Last winter, student and labor demonstrations against higher busfares forced the previous Prem government to rescind the increase.

The shortfall in gas production will threaten the financial stability of the Petroleum Authority of Thailand, whose revenue from selling gas to the electric authority is about half of what it projected. PTT already has cash flow problems stemming from the failure of other state enterprises to pay their oil bills and from the financing of the gas pipeline. Moreover, PTT may be forced to refund to Union the penalty exacted when the company failed to meet contract production levels. A full refund would wipe out most of PTT's \$40 million profit for last year. If this happens, PTT may again need government subsidies and will probably have to delay further gas development, especially the construction of pipeline from Texas Pacific's "B" structure to the existing Erawan pipeline.

Looking Further Ahead

Although Bangkok continues to search for potential buyers, according to the local press, there is little likelihood that Thailand will export LNG in the foreseeable future. Thai law allows the export of LNG only if there is sufficient gas to meet domestic demand. Moreover, Bangkok probably cannot finance an LNG project on its own, and the global energy glut has eliminated potential foreign sources of financing. Even if additional gasfields are found in the next few years, production of LNG would be unlikely before the early 1990s, according to assessments made by industry journals.

In our judgment, Bangkok's most important adjustment to lowered gas reserves will be to reduce the size and cost of the Eastern Seaboard industrial complex (see table 2). Thai officials had projected that the industrial complex and electricity generation would use about 23 mcmd of gas by 1988. We now believe that slightly more than half this quantity will be available. Bangkok had already cut some projects and delayed others pending the redetermination of Erawan's reserves. The sponge iron and alcogas projects have been dropped. A further pruning of projects and delay of the remainder is also likely.

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Table 1
Thailand: Balance-of-Payments Summary

Million US \$

	1977	1978	1979	1980	1981	1982 a	1983 ь
Current account	-1,098	-1,154	-2,087	-2,078	-2,556	-1,125	-1,900
Merchandise trade c	-784	-859	-1,551	-1,903	-2,032	-831	-1,900
Exports f.o.b.	3,454	4,045	5,234	6,449	6,898	6,839	6,800
Of which:							
Rice	656	513	764	953	1,208	979	950
Sugar	365	195	235	145	441	563	600
Tapioca	378	535	484	7:27	754	859	850
Rubber	302	395	605	603	500	413	550
Tin	223	356	453	554	423	338	450
Corn	159	208	276	356	382	362	500
Manufactures	384	548	699	836	830	1,014	1,170
Imports f.o.b.	4,238	4,904	6,785	8,352	8,930	7,670	8,700
Oil .	937	1,016	1,423	2,552	2,519	2,352	2,300
Services (net)	-398	-439	-783	-760	-1,169	-1,085	-800
Transfer (net)	84	144	247	535	645	791	800
Nonmonetary capital (net)	726	489	1,743	2,351	2,446	1,332	1,700
Long term (net)	428	646	1,477	2,107	2,352	1,585	2,000
Direct investment	106	50	51	139	288	183	225
Short term d	298	-157	266	244	94	-253	-300
Balance	-372	-665	-344	273	-110	207	-200
Foreign exchange reserves c	1,915	2,557	3,129	3,026	2,727	2,652	2,700

^a Estimated.

Sources: Bank of Thailand; International Monetary Fund.

Barring a further downgrading of reserves and another drop in world energy prices, however, we believe Bangkok will move ahead with a smaller version of the petrochemical complex and the fertilizer plant.

the fertilizer complex is "the number-one priority in Thailand," and is needed to raise the country's low agricultural yields. And the petrochemical complex is the centerpiece of the current five-year economic development plan. If the

petrochemical and fertilizer plants come on line before Texas Pacific's "B" structure is developed, however, it will be necessary to limit the supply of gas consumed in electric power generation, replacing it with imported steaming coal and locally mined lignite. The electricity authority is already studying this alternative. 25X1

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b Projected.

c End of period.

d Includes errors and omissions and allocations of SDRs.

Table 2
Thailand: Eastern Seaboard Development Program a

Project	Description	Cost (US \$)	Status
Infrastructure improvements	Bangkok is improving roads, ports, and communications along the Eastern Seaboard.	1.3 billion	Road construction nearing completion. Port expansion under way.
Natural gas sepa- ration plant	Two 10-million-cubic-meter-per-day units are planned to process natural gas into feedstock for petrochemical and fertilizer plants.	320 million per unit. Japanese and World Bank loans provide primary financing.	First unit under construction; completion scheduled for 1985.
Petrochemical complex	The initial olefins plant will be 51 percent government owned; the downstream plants will be developed by the private sector. Output is intended for domestic use.	870 million	Bangkok is having trouble recruiting private investors and may have to increase its participation. Olefins plant scheduled for completion in 1988.
Fertilizer plant	A 1,000-ton-per-day ammonia plant and a 1,500-ton-per-day urea plant are planned.	780 million	Construction scheduled to begin in early 1984. Bangkok formed National Fertilizer Company last year to arrange financing.
ASEAN soda ash plant	Thailand's contribution to ASEAN Industrial Project.	375 million; 70- percent Japanese financing.	Feasibility study concluded. The project would be unprofitable, and implementation is doubtful.
Sponge iron plant	Annual capacity of 400,000 tons. Production to use imported ore and domestic natural gas.	80 million	On indefinite hold. Dropped from Bangkok's list of ESDP projects.
Integrated steel plant	Steel industry master plan calls for annual production of 1.6 million tons by 1990, using imported coal and iron ore.	2.7 million	On hold. To be moved away from Eastern Seaboard because of potential pollution prob- lems. Feasibility study continuing.
Light industry development	Bangkok is seeking electronics and other labor-intensive assembly plants.	No estimate.	Bangkok is counting on private-sector initia-
Expansion of tourist facilities	Additional hotels and resorts.	No estimate.	tive for both light industry and tourism development.

^a The Eastern Seaboard Development Plan (ESDP) calls for a \$4.9 billion natural-gas-based heavy industry complex located between Rayong and Sattahip (where the natural gas pipeline comes ashore). Government plans also include development of a labor-intensive, export-oriented sector centered at Laem Chabang and expansion of tourist facilities centered at Phatthaya. The ultimate hope is to turn the Eastern Seaboard into an industrial alternative to overcrowded Bangkok.

Reserves in the undeveloped fields in the Gulf of Thailand may also be substantially overestimated, or their production may prove uneconomical at the prices Bangkok is willing to pay. If this proves to be true, natural gas production may never rise above 11 to 14 mcmd. We believe Bangkok would then abandon the fertilizer plant, but would continue with a

small-scale petrochemicals project. Dr. Snoh, Thailand's chief planner, has said that private-sector profitability will always determine which projects go forward.

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A New Development Strategy?

Although the Industry Ministry and PTT view the downgrading of gas reserves as a major blow, some Thai technocrats—including Snoh and Central Bank governor Nukun-believe there are positive aspects to the downgrading of reserves and the scaling back of the industrial complex, according to the financial press. These technocrats had been concerned that the full implementation of the Eastern Seaboard complex would have skewed manufacturing investment in the direction of large-scale, capital-intensive industries while hindering the expansion of labor-intensive, export-oriented industries that have been the engine of growth for other Asian countries. Foreign borrowing requirements for the \$4.9 billion project would have rapidly increased the Thai foreign debt, making it harder and more expensive for Thai businessmen to borrow abroad for other projects. Moreover, although the capital-intensive industrial projects would have provided relatively few jobs, we believe they would have absorbed much of the skilled and technical labor in Thailand and also bid up the general level of wages, thus discouraging foreign investment in labor-intensive manufacturing. These problems may still occur to some degree if Bangkok persists in trying to establish many of the Eastern Seaboard projects.

In our view, Thai technocrats will use the downgrading of reserves to argue for a reorientation of Bangkok's development strategy to deal with the country's longer term economic problems. Although the economy turned in a remarkable performance over the past two decades, with economic growth averaging more than 7 percent a year, that growth was fueled in large part by increases in area under cultivation. Most good agricultural land is now in use. Moreover, measures to keep urban food prices and thus urban wages low have depressed farm incomes and discouraged investment in high-yield seeds, fertilizer, and irrigation equipment, keeping agricultural yields among the lowest in Southeast Asia. In addition, segments of the manufacturing sector—especially basic consumer goods, which developed behind moderately high tariff barriers—are inefficient and unable to compete in international markets. And labor force growth of 700,000 workers a year exceeds the economy's current potential to create jobs.

We are somewhat optimistic that Bangkok will implement economic reform in time to prevent the development of increasingly serious economic strains. Thai planners, aided by World Bank economists, have already drawn up a reform package as part of the current five-year economic development plan (1981-86). This package includes measures to:

- Improve manufacturing efficiency and international competitiveness by reducing tariffs and other protection given domestic manufacturers.
- Stimulate domestic and foreign investment to create jobs and provide export earnings by increasing investment incentives and liberalizing the financial system to increase savings.
- Reduce the large budget deficit by cutting subsidies to unprofitable state enterprises and increasing taxes.

The Prem government has made some progress in implementing these reforms. Since 1980 it has reduced some tariffs, increased interest rates to encourage saving, devalued the currency to encourage exports, raised some taxes, and begun to reduce subsidies to state enterprises. Little has been done, however, to shift development funds to rural areas or adopt measures that reverse the urban-rural bias in policymaking. Over the next few years we expect Bangkok to continue its economic reform package, although in a start and stop fashion in response to domestic reaction. If so, the demonstrated responsiveness of both Thai farmers and businessmen to economic incentives should return the economy to a period of strong growth.

The Downside Risk

It remains possible, however, that opposition by politically powerful vested interests may undermine Prem's attempts at economic reform. Protectionist pressures from the growing manufacturing sector have been on the increase in recent years, according to the World Bank. Local industrialists—the backbone of the large, opposition Thai Nation Party—will probably try to resist further tariff reductions that would subject their enterprises to increasing foreign competition. These industrialists will also probably oppose attempts to

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illocate substantial portions of the government's	
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oudget to rural development projects. In addition,	l
tate enterprises are often the source of government	l
positions and income for influential military figures,	· ·
who are likely to resist budget cutting.	25X1
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f successful opposition or government indecisiveness	
prevents the implementation of more substantial eco-	ì
nomic reform over the next few years, we believe the	
Thai economy would face sharply reduced growth and	
he potential for serious unemployment and balance-	
of-payments problems by the end of the decade.	
Agricultural growth has already slowed to less than 3	
percent annually over the past few years, compared	
with the more than 5-percent annual rate of the	
previous 20 years. And domestic savings—the major	
source of funds for both agricultural and manufactur-	
ng investment—has leveled off at 20 percent of GDP,	*
with no increase for nearly a decade.	25X1
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Continued dependence on commodity exports, which	
now provide 60 percent of export earnings, along with	
a failure to increase substantially manufacturing ex-	I
ports would leave the balance of payments vulnerable	
to swings in international commodity prices. This year	I
depressed earnings from commodity exports (along	
with a 15-percent rise in imports) threaten to push the	1
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deficit on the current account (which records the	
balance of trade in goods and services) nearly \$800	
million higher than last year's \$1.1 billion deficit, and	
strong import growth is likely to continue as the	
economy strengthens and as modernization of Thai	
industry proceeds. If these deficits accelerate over the	
decade—which is probable without reform—Bangkok	•
would either have to impose drastic imports cuts or	
accelerate foreign borrowing to cover the deficit.	25X1
Moreover, incomplete reform would only add to what	
will be a problem of growing unemployment in any	
event. According to the World Bank, agriculture will	
absorb at most only a third of the labor force entrants	
over the next decade, accelerating rural-urban migra-	
ion. Without a substantial increase in manufacturing	
obs, these trends will substantially increase Thai-	
and's relatively low urban unemployment rate of	
about 6 percent and add to the potential for labor	
inrest.	25X1
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Appendix A

Energy Policy Making in Thailand

Thailand does not have a national petroleum company similar to Pertamina in Indonesia or Petronas in Malaysia. Instead, energy policy is divided among several departments, committees, and agencies The Department of Mineral Resources (DMR) under Siwawong Changkasiri oversees the granting of exploration concessions for petroleum and minerals. The Petroleum Authority of Thailand (PTT) under Dr. Tongchat Hongladarom oversees oil and gas production, contracts for the purchase of foreign petroleum products and their resale to other state enterprises, and operates the natural gas pipeline. PTT is also involved in negotiating gas prices with Union Oil and Texas Pacific. PTT plans to increase its direct participation in petroleum exploration and development activities and will, we believe, eventually absorb most of the petroleum-related activities of the DMR. The Ministry of Industry has direct responsibility for both PTT and DMR as well as for the implementation of the Eastern Seaboard Development Program. Deputy Industry Minister Chirayu has emerged as the government's chief spokesman for the petrochemical complex. The Ministry favors LNG exports as a way	The National Economic and Social Development Board (NESDB), headed by Dr. Snoh Unakun, is charged with integrating natural gas production into Thailand's economic development planning. It has no day-to-day decisionmaking power. The NESDB opposes LNG exports, believing the gas should be used for domestic development. The National Energy Authority (NEA), part of the Ministry of Science and Technology, currently plays a minor role, sharing energy planning and coordination responsibilities with other agencies. Consultants have recommended that NEA be given a much expanded role in a new Ministry of Industry and Energy. The Defense Energy Department (DED) of the Ministry of Defense operates a small oilfield and refinery in the north. Although DED's responsibilities have been shrinking over the past five years, the Defense Ministry continues to delay DED's planned incorporation into PTT because the Army wants to maintain some control over its oil supplies.	25X 25X1 25X 25X1 25X 25X 25X
of earning foreign currency and reducing balance-of- payments problems.	•	25X
The National Petroleum Policy Committee, chaired by the Prime Minister, is a ministerial-level committee with overall responsibility for energy planning. The committee is strongly influenced by Minister Without Portfolio Sulee Mahasanthana, widely considered Thailand's "energy czar" and, according to the US Embassy, Prem's most influential economic adviser.		05.
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Appendix B

Domestic Energy Sources

Natural gas. Current industry estimates place proved and probable reserves in the Gulf of Thailand at 340 billion cubic meters. Union also struck gas in waters jointly claimed by Thailand, Kampuchea, and Vietnam before Bangkok stopped all drilling in the area. Exxon is exploring a promising gas-bearing structure on shore in the Khorat plateau but will not be able to estimate reserves until 1985.	Oil Shale. Over 2.5 billion tons containing an estimated 2-3 billion barrels of oil have been found at Mae Sot in Tak Province. Development of this field is unlikely soon because of its remote location near the Burma border and because of high production costs. Nuclear. Thailand has no nuclear power facilities and no plans to acquire any before the 1990s.
Oil. Shell's 1981 discovery of oil in Kamphaeng Phet Province about 400 kilometers north of Bangkok rekindled interest in onshore exploration. Commercial production—Thailand's first—began in January at a rate of 4,500 b/d and is expected to reach 12,000 b/d, or about 7 percent of crude oil imports, by 1984. Shell's field is small and fragmented, with recoverable reserves placed at about 25 million barrels expect additional oil discoveries in the north and the nearly unexplored northeast, but the finds will probably be small and scattered.	Biomass. Wood fuels, rice husks, and bagasse provide about 20 percent of total energy requirements. Although the relative contribution of biomass is expected to diminish, these materials will remain more important than either lignite or hydropower for the next 20 years.
Lignite. This is the most promising nonpetroleum energy source, currently providing about 4 percent of Thailand's energy. Reserves are estimated at about 1 billion metric tons with a large deposit at Mae Moh now being developed. Lignite is already used in several small thermal plants, and a 150-megawatt plant near Bangkok is under construction. Thailand's electricity authority plans to use lignite to generate about 20 percent of the country's electricity by 1990, thus freeing some gas for production of higher valued petrochemicals and fertilizer. Hydroelectric power. Hydropower currently supplies about 5 percent of Thailand's energy. Additional capacity of about 2,000 megawatts is planned for the 1980s but is being delayed by conservationist protests and disputes over international rivers, especially the Mekong.	

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